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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,456

09/29/2004

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EXAMINER

YEE, DEBORAH

ART UNIT

PAPER NUMBER

1793

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,456	Applicant(s) GUELTON ET AL.	
	Examiner Deborah Yee	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9-12 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 6, 8 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 to 5, 7, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,925,500 (Kishida et al; US'500) in view of Japanese patent 7-265908 (Toshiyuki Kajitani et al; JP'908).

3. Claims 1-5,7, and 9-12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,961,793 (Kishida et al; US'793) in view of Japanese patent 7-265908 (Toshiyuki Kajitani et al; JP'908).

4. US'500 and US'908 closely meet the claimed process for the reasons stated in the previous office action dated May 24, 2007 but do not teach a thickness of ≤ 10 mm when continuously casting steel slab. It would, however, be obvious to expect a thickness of 10 mm, since continuous casting has the capability of manufacturing a steel slab with a thickness of 10 mm, as evident by paragraph [0007] in English translation of JP'908.

Response to Arguments

5. Applicant's arguments filed November 26, 2007 have been fully considered but they are not persuasive.

6. US Patent' 500 on lines 40 to 66 in column 7 and lines 1 to 11 in column 8 and lines 36 to 45 in column 6 discloses a copper-rich carbon steel sheet processed in substantially the same manner as claimed by applicant comprising the steps of continuously casting, regulating temperature to below 1080 and above Ar3 (overlaps with claimed range of 1000C or below), hot rolling and coiling at 100 to 350C(overlaps Ms to < 300C) . Also similar to the present invention, prior art teaches maintaining Cu in solid solution throughout hot rolling and coiling.

7. Even though US'500 does not teach performing a quick cooling step of the cast products down to 1000C or below before hot rolling, as recited in claim 1, such would be suggested since the reasoning for implementing this step by Applicants is also the same reasoning taught by US'500 which is to avoid crazing (equivalent to hot shortness).

8. Note that present invention on pages 13 and 14 of Applicant's specification teaches "...cooling to $\leq 1000\text{C}$ to avoid the problems of crazing of the steel strip surface associated with the intergranular infiltration of liquid copper into the steel below the scale when the temperature of the strip exceeds the melting temperature of the copper-rich phase, namely approximately 1000C". Similarly US'500 on lines 36 to 56 in column 6 teaches avoiding hot shortness (equivalent to crazing) of copper-added steels which "...occurs when a copper-enriched portion formed under a scale formed on the surface of the steel become liquid upon being heated above the melting point and penetrated into the austenite grain boundaries. Therefore, in order, to prevent the occurrence of hot shortness in the step of hot rolling, it is ideal for the copper-enriched portion to be

heated below the melting point, and it is preferred at a temperature of 1080C or below when the performance of a rolling mill is taken into account.”

9. Thus it is the Examiner’s position that when high-temperature steel slab of US’500 is directly transferred from a continuous casting machine to hot rolling mill (on lines 40 to 46 in column 7), a cooling step prior to hot rolling would be obvious and expected since hot shortness needs to be avoided by controlling temperature to 1080C or below. Moreover, fast cooling would be applied, since US’500 on line 46 of column 5 teach the need for Cu to be in solid solution state prior to working.

10. Applicants further argued that US’500 is directed to classical continuous casting of thick products at about 200 mm thickness whereas present invention is directed to thin strip casting having a thickness ≤ 10 mm. It is the Examiner’s position that US’500 teaches continuous casting steel slab but does not disclose or suggest a thickness of 200 mm. Moreover, it is well known in the art that continuous casting has the capability to produce thin cast pieces as low as 10 mm, as evident by the English translation of Japanese patent 7-265908 (Kajitani, Toshiyuki et al.) in paragraph [0007]. Hence prior art continuous casting can include strip thickness as low as 10 mm, which would suggest Applicants’ casting thin strip at 10 mm.

11. Same arguments stated with regard to US’500 above also apply to US’793.

12. For the reasons stated above, claims would not patentably distinguish over prior art.

Allowable Subject Matter

13. Claims 6, 8, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: The process for manufacturing a steel product made of copper-rich carbon steel, characterized in that the carbon content of the steel is between 0.1 to 1%, as recited by claims 6, 8 and 13, is not taught or fairly suggest by the art of record.

15. The process of US'793 and US'500 teach a steel containing $\leq 0.01\%$ C and 0.0005 to 0.015% C, respectively, and are significantly lower than the claimed C range of 0.1 to 1%. Moreover, US'793 on lines 44-46 of column 2 and US'500 on lines 44-60 in column 3 teach that in order to ensure a high r-value, high strength and ductility, it is necessary for the carbon content to be decreased as much as possible. Since prior art teaches away from higher C content, then one skilled in the art would not be motivated to incorporate higher C-content steel to prior art method.

Drawings

16. The drawings are objected to because the decimal point is represented by a comma rather than a period. For example, "11;6" should instead be ---11.6---.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an

amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Application/Control Number:
10/501,456
Art Unit: 1793

Page 7

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1793

/DY/